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Serial No.: 10/674,721

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method for modifying the level of a speech signal, wherein the speech signal is encoded as a bit stream, the method comprising:
changing a gain parameter in the encoded speech signal in a variable and cyclical manner so that changes in gain are temporally dispersed.
2. (Original) The method according to claim 1, wherein the gain parameter is a fixed codebook gain index.
3. (Original) The method according to claim 2, wherein changing the gain parameter comprises incrementing the fixed codebook gain index in a variable and cyclical manner so that the increment in fixed codebook gain is temporally dispersed.
4. (Original) The method according to claim 3, the method further comprising:
maintaining the fixed codebook gain index at a first index increment value for a first portion of a cycle period; and
incrementing the fixed codebook gain index to a second index increment value for the remaining portion in that cycle period.
5. (Original) The method according to claim 4, wherein a first cycle period is defined by a pattern of index increment values, the method further comprising the step of repeating the pattern in one or more subsequent cycle periods.
6. (Original) The method according to claim 4, wherein a first cycle period is defined by a pattern of index increment values, the method further comprising the step of changing the pattern in one or more subsequent cycle periods.
7. (Original) A method for modifying the level of a speech signal, wherein the speech signal is encoded as a bit stream such that the speech signal is transported in one or more frames, each frame including a plurality of sub-frames, the method comprising:

Serial No.: 10/674,721

changing a gain parameter in the encoded speech signal in a variable and cyclical manner over a plurality of sub-frames so that changes in gain are temporally dispersed over one or more sub-frames.

8. (Original) The method according to claim 7, wherein the gain parameter is a fixed codebook gain index.

9. (Original) The method according to claim 8, wherein changing the gain parameter comprises incrementing the fixed codebook gain index in a variable and cyclical manner over the plurality of sub-frames so that the increment in fixed codebook gain is temporally dispersed.

10. (Original) The method according to claim 9, wherein a predetermined number of sub-frames define a cycle period, the method further comprising:

maintaining the fixed codebook gain index at a first index increment value for one or more sub-frames in a cycle period; and

incrementing the fixed codebook gain index to a second index increment value for the remaining sub-frames in that cycle period.

11. (Original) The method according to claim 10, wherein a first cycle period is defined by a pattern of index levels by sub-frame, the method further comprising the step of repeating the pattern in one or more subsequent cycle periods.

12. (Original) The method according to claim 10, wherein a first cycle period is defined by a pattern of index levels by sub-frame, the method further comprising the step of changing the pattern in one or more subsequent cycle periods.

13. (New) A method for modifying the gain of a speech signal, wherein the speech signal is encoded as a bit stream such that the speech signal is transported in frames, each frame including a plurality of sub-frames, the method comprising:

extracting a fixed codebook gain index of the speech signal from the bit stream;

estimating noise in the speech signal;

Serial No.: 10/674,721

computing a new fixed codebook gain index as a function of the extracted fixed codebook gain index and the estimated noise; and

incrementing the new fixed codebook gain index over a plurality of sub-frames such that the index increment is temporally dispersed over one or more sub-frames.

14. (New) The method according to claim 13, further comprising the steps of:
computing a gain value of the noise; and
responsive to the computed gain value of the noise, generating an index increment value and a remainder value, wherein the index increment value is an integer and wherein the remainder value is a fractional value between 0 and 1.

15. (New) The method according to claim 14, further comprising generating a time-dispersed index increment as a function of the index increment value and the remainder value.

16. (New) The method according to claim 15, wherein generating the time-dispersed index increment comprises increasing the index increment by a value of 1 as a function of the remainder value over one or more cycle periods, wherein the frequency of increasing the index increment is higher when the remainder value is closer to 1 and wherein the frequency of increasing the index increment is lower when the remainder value is closer to 0.

17. (New) The method according to claim 16, wherein the new fixed codebook gain index is derived by adding the time-dispersed index increment to the fixed codebook gain index extracted from the speech signal.

18. (New) An apparatus for modifying a bit stream corresponding to a speech signal, wherein the bit stream carries the speech signal in frames, each frame including a plurality of sub-frames, the apparatus comprising:
a decoding element adapted to extract a gain parameter from the bit stream; and
a gain dispersion unit adapted to increment the gain parameter in a variable and cyclical manner over a plurality of sub-frames such that changes in gain are temporally dispersed over a plurality of sub-frames.

Serial No.: 10/674,721

19. (New) The apparatus according to claim 18, wherein the gain parameter is a fixed codebook gain index.

20. (New) The apparatus according to claim 19, wherein the gain dispersion unit is operable to increment the fixed codebook gain index in a variable and cyclical manner over the plurality of sub-frames so that the increment in fixed codebook gain is temporally dispersed.

21. (New) The apparatus according to claim 19, wherein a predetermined number of sub-frames define a cycle period, the gain dispersion unit being further operable to:

maintain the fixed codebook gain index at a first index increment value for one or more sub-frames in a cycle period; and

increment the fixed codebook gain index to a second index increment value for the remaining sub-frames in that cycle period.

22. (New) The apparatus according to claim 21, wherein a first cycle period is defined by a pattern of index levels by sub-frame, the gain dispersion unit being further operable to repeat the pattern in one or more subsequent cycle periods.

23. (New) The apparatus according to claim 21, wherein a first cycle period is defined by a pattern of index levels by sub-frame, the gain dispersion unit being further operable to change the pattern in one or more subsequent cycle periods.